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03 Digital Inclusivity through Universal Acceptance of Domain Names and Email Addresses

>> Joe Catapano: All right. Well, thank you to NASIG once again for having me here. My name is Joe and I am the senior manager for stakeholder engagement focused on the North America region at ICANN. I don't think we've actually said what ICANN means yet.

So ICANN stands for the Internet corporation for assigned names and numbers, and the first half of my deck here will focus on those last two letters, N and N.

I'm based here in Washington, D.C. Yes, ICANN does have offices and we have one here. It's slightly -- it's what we call an engagement center. A slightly smaller office. But there are a lot of ICANN organization functions that reside in that office, stakeholder engagement, communications, policy just to knack a few.

So I want to thank Derrick and American University. This is very special for me. I am a proud AU Eagle, graduate of the school of public affairs.

[APPLAUSE]

>> Thank you.

So being able to come back here and speak at AU supervise certainly something special.

When I came out of graduate school at AU, I had a graduate degree in political science. My why you are not graduate work which I did back in Connecticut was in communications and I was searching for something that blended those two fields and it took a little bit of time but eventually I found ICANN and that was it. That was the perfect blend of those two things. So if you're younger, just starting out your career or still in school, you're trying to find out where do I fit in space, interested in this certain aspect of tech law, tech policy but I'm not quite sure, please feel free to find me during coffee or lunch over the next two days. Be happy to talk to you.

I will do my best as we all will throughout the next days to spell out the acronyms. Sometimes we for get. If we do, call us out on it and have us spell it out.

And so with that I think we can go right into it here.

So what is this? This a URL, right? ICANN.org. That is the URL for the ICANN home page.

Next slide.

Now, ICANN.org is the name, and then right above that on this slide is the number. That number is called an Internet protocol, or IP address. And so the Internet protocol is a set of rules that allows your computer, smartphone, or other device, to find the correct location that you typed in. It identifies devices primarily by using a long string of numbers. Every computer and smart device has an IP address. Also every Web site has an IP address behind the name. The numbers are not easy to memorize. So in the early days of the Internet, a list was set up to map the words or the names to the IP address. Because it's easier for us as humans to understand and remember names than it is numbers. Next slide.

So believe it or not in the early days when there were only a few hundred Internet users, the names and numbers were kept on an actual physical paper list. It's hard to believe when someone -- when I first came to ICANN and someone told me that it was like what? However that was the way it was. And this wonderful caricature here is of a gentleman named John Pastel, a researcher at the university of southern California and he single handedly kept track of the names and numbers. Sometimes you'll refer to it as a host and

the host is any device that has an IP address and connected and reachable over the Internet.

Next slide. So today, of course, Internet has billions of users. There is no way that a handwritten list maintained by one individual could exist. I suppose it could but it would be incredibly unwieldy and you need a lot of physical space for it. So because of this, the manually maintained address book was replaced by an automated and distributed address book system commonly referred to as the domain name system or DNS and at its most basic level, ICANN coordinates the top level of the domain name system. Again, the most basic level.

There are many nuances to that statement. And those are things that I'm learn about over the course of the next few days and if you're joining us at the ICANN meeting downtown over the next week, you'll learn a lot about that as well.

Thanks. So when you want to visit the ICANN Web site, you'll type ICANN.org into your browser.

And your computer device will send this information through the Internet to find ICANN.org. Then your device will receive this information and then eventually take you to the ICANN Web site.

And you can move to the next slide. I apologize, we've got the hybrid environment, sometimes we have things that strike the top and bottom. There we go. Awesome. So that's the simplest explanation. To take the understanding of this a bit further, let's talk about how domain names end. The ICANN Web site ends in.org and there are many popular websites that end in.com, right, which would be another one which has obviously a large number of reservations and then there are more that are -- and there may be a couple of advancements there. There you go. Some that are two letters, those are what we call country code domains. The answer is yes, pawb low, that should have been.PR and I'll be sure to do that next slide.

However, for the purposes of this slide,.AU is the Web site for the Australian government. In North America we have.PR and then of course.US and CA.

Next slide.

Wonderful. Here is that kind of break down. You'll hear the acronyms GTLD which is generic top level domain and there are examples of that, probably the three most well-known examples of a GTLD is -- are up there and when as I said CCTLDs and then a few more examples here. So these are called top level domains. And they are everything to

the right of kind of the furthest dot or sometimes people just shorten and say to the right of the dot but when you get longer addresses there will be many dots. Everything to the extreme right so domain name registries are organizations that manage top level domains. They work with registrars to sell domain names to the public. If you think to Dr. Pastel's paper list, registries work with registrars to keep an electronic version for everyone who registers a domain name within the top level. So to kind of put it another way, the company that controls.com keeps a list of everyone with a.com domain name. The organization controlling.AU in the example I used keeps a list of everyone with a.AU name and so on so either to. So ICANN works with each registry and registrar to ensure that the information is easily findable for everyone.

So now these look a little different. And so you'll see two acronyms there at the top. So blockage there but so new GTLDs or new generic top level domains and something called an internationalized domain name which is going to be critically important to what the panel is going to discuss after I step aside here. So in 2012, there were new domain names, top level domain names introduced into the root zone of the Internet. And those obviously differ from some of what you may hear called legacy top level domains which were the ones on a couple of slides, dislom,.org, and several others.

So the goal of the new GTLD program is to foster competition, innovation, and choice in the domain name industry. It was an Internet community driven initiative that enabled the largest expansion of the domain name space. The new GTLD program was managed by ICANN and it took shape through the policymaking process that is as Derrick mentioned in his keynote, multistakeholder in nature. And so now there are over 1200 new top level dome names. So if you look at the example here -- I'll take the GTLDs first. So there's an -- apologize there's an extra dot there. Not supposed to be there. Kind of a generic. There are what we call branded generics. So an example here is . BMW. Not an endorsement of BMW although I hear they're wonderful vehicles. And then there are kind of location-based generics, if you will, example here being .NYC. Not an endorsement of New York City. However, my parents were born in Brooklyn so if there's an issue please come see me at lunch. Now, moreger nan to what Susan Armond are going to be talking about, these are actually country code top level domain names but they're in local scripts. So this here is -- on the left is Serylic for Monday goalia and in the middle we have Arabic for Pakistan and then finally a Chinese script for Singapore.

If you could advance me to the next and final slide I have.

Other way.

One more, please. Wonderful. Thank you.

Ent uniform acceptance which is going to be the subject now. So the DNS has evolved but the checks used by a lot of the software application used to validate domain names and e-mail addresses rough main outdated. So universal acceptance is considered a technical compliance best practice and it solves the issue by ensuring that all valid domain names and e-mail addresses regardless of script, lack, or character length can be used equally by all Internet-enabled applications, devices, and systems. So we have internationalized domain names out there and now we need to make sure they work seamlessly. So in a way universal acceptance or more specifically the adoption of universal acceptance really brings the promises and benefits of IDNs to fruition. And that is what your experts are going to talk about now. With that, I will hand it over to Kathleen.

>> Test. Just make sure this works.

Well, hi, everyone. My name is Kathleen and I am the program coordinator for the tech Lon security program here and also work with the ITP program. So happy to have you all here. Have had the pleasure of being part of the NASIG planning committee the last couple months. Thank you for everyone who made this event possible and thank you to Joe for giving us that great introduction about domain names generally and now dive a little bit more into universal acceptance. But first I would love both of my panelists to introduce themselves, tell us who you are, what your role is, a little bit about your background and how you got here.

>> Good morning. My name is Susan and I work in the office of international affairs at the national telecommunications and information administration, which is part of the United States Department of Commerce. I have been with NTIA for about seven years I guess. I started my career in Internet governance in new displeel land actually with the administrator, the country code top level domain.

And moved to NTIA about seven years ago. So it's a pleasure to be here. Universal acceptance is really a very interesting but a critically important topic if we want to have an inclusive and multi lingual Internet. So just thank you for having me.

>> So my name is Seremad. I am with ICANN. I'm involved with the internationalized domain names and the universal acceptance program at ICANN. And before ICANN, I have been in academia. Was a professor of computer science back home. I can um from Pakistan. And have always been interested in language technology and that's sort of my area of specialization and that's also, I guess, what I do at ICANN. Thanks.

>> Kathleen: Awesome. Thank you so much. Glad to have both of you here and exciteed to jump into an interesting discussion.

My first question for boat of you is what is your definition of universal acceptance and how does it relate to domain names and e-mail addresses?

>> Susan: I will leave it to Sarmad to address this in any more technical way, but basically we understand universal acceptance to serve as the foundation for a multi lingual Internet. It is, I think, consists of some technical standards, but collectively it is that which is necessary for people to be able to engage online, to visit websites in their own native scripts and it is a very important topic we need to be discussing and coordinating on. I think coordination is the -- one of the key factors here in promoting UA.

>> Thanks, Susan. So I'll build up a little bit on that and get into some technical details. So as Joe was sharing earlier, that, you know, we've -- you know, since 2012 there have been many more GTLDs which have been introduced in the route of the Internet. These top level domains have certain futures which these strings didn't used to have before. So all the technology which was developed around supporting domain names and e-mails addresses which also include domain names was built around certain summations. One summation was, for example, that top level domain would be two or three characters long. And then some people had even more significant hard coding of that summation. They said only these 22 or 23 strings were allowed as top level domains and a lot of that technologies sort of since those top level domains like .AU or .com or .org, they have been around for many years, those assumptions actually got built into software and that's caused a problem because since 2012 now there are many more strings and these strings can be categorized in three buckets, I guess.

You can have new strings like .sky which are still three characters long but not part of that 22 or 23 quote/unquote legacy top level domains. There are also these longer strings which are -- they're not two letters or three letters but much longer, like .technology or .international. Then there's these strings, top level domains which are in local languages. Like the examples you saw shared by Joe earlier in different languages and scripts. And the technology was -- o is still in some cases just not ready. So when you enter a domain name or e-mail address they're expecting some of the older kinds of domain names and when you type in these new kinds of domain names the technology of the Web site says that this domain name or e-mail address is not valid because the rules they're applying to check for those domain names are still old and that causes what is -- we would want names of e-mail addresses and this is what is really causing the problem of sometimes which we obviously want to address.

>> Callet lean: Thank you so much for the background. I know we have a number of nontechnical people in the room so thank you for that.

You touched on this already a bit but what are some of the historical and cultural factors that contributed to the lack of UA in the initial development and how have these factors overall impacted the development of the Internet?

>> Samard: So, you know, when computing was starting out, right, we had real challenges about memory and processing powers of computers and and, you know, in that era, I guess, so to speak, normally when they started processing information, letters, for example, they used about seven bit or eight bit codes. This is just because the number -- as I said, the memory or the processing power was very limited when we started out. And just to translate that into what that means, if you have a seven bit code, you can create about 128 possibilities of that and 128 possibilities when people were using these to create, for example, letters which people could use beyond just, you know, numbers for computers, cocked only encode 128 characters which meant -- and then obviously this was being started out and done in the U.S. so first thing of course was to encode letters and characters which are being used locally. So that's where we started. We started encoding letters and since we had only 128 or 128 slots, we encoded A, B, C letters which are used in English, symbols and numbers which were used in English as a starting point. It was certainly not I guess probably intended to just do it -- only do it that way, but because of limitations or technology that's where the starting point was.

As -- of course, computing Internet went broader beyond of course, the borders of U.S., I guess, and into Europe and other parts of the world, the community very quickly realized that, you know, this is a limbs which needs to be addressed and that obviously started I guess, the next stage but you know, since your question was on more of historical context, you know, since the work started from here initially and there was limitations in computing and there was limitations in processing stories and processing both, you know, that was sort of the, I guess, best starting point in that context.

>> So just to build a we bit on Sarmad's excellent history there, I think, you know, as you mentioned, well, the Internet was born in the United States and so it makes sense that the DNS primarily catered to English, but I think it's fair to say that progress towards internationalized domain names was relatively slow going for the rest of the world. We saw at the international telecommunications union in 2002 a resolution introduced to deal with multi lingual domain names and that was really I think reflecting frustration among countries whose native or official languages were essentially absent from the Internet. And until late 2009, the Internet's DNS was available only in Latin character languages, but it's

important to know that progress has been made. Today there are 91 generic TLDs and nonAscii scripts and 61IDN top country level domains which Joe had showed earlier representing global communities online in native scripts. So I think the more important question here is what steps can we take now, today, because of the evolution of computing and because we have the technical solutions, where do we go from here?

>> Yeah, I think that's a really great point to address the progress that has been made and I think that a lot of what Joe had brought up and what both of you brought up as well was ensuring meaningful access to the Internet. Not simply that you're able to access a Web site but that you're able to use it in a way that is most comfortable to you. So would you all be able to expand a little bit on what it means to have meaningful use of the Internet and how universal acceptance kind of plays into that? You already touched on that but:

>> Susan: Sure. So I think meaningful expanded connectivity via secure global digital ecosystem which is built upon a multi lingual Internet will drive economic prosperity, raise standards of living, create jobs, and so the foundation there is a multi lingual Internet. It's pretty straight forward. And the multi lingual Internet is based upon -- is built upon universal acceptance. When you have -- when you're able to engage with the Internet in your own script, in your own language and there's so many opportunities that are now -- that are yet unrealized now for folks to connect more meaningfully with government services to promote the development of local content online. So those are just a few examples I think.

>> Sarmad: So I'll start with an example. I have a back home who went for graduate school not far from here so I guess university in D.C. and he's now back home. He's in academia. Teaches computer science. Every day he, you know, opens up his laptop and goes online to read the news and you know yen those he's fluent in English, he opens an Udu newspaper and online and reads news in Udu even though he can understand everything in English. It's a cultural thing. And it's -- you know, I think when we're talking about, you know, great code that, you know, Internet connects people. It doesn't connect machines. And when people are connecting with each other, one of the main thing or, I guess, mechanism to connect is to use language and, you know, normally they're most comfortable in their own mother tongue. I guess that's the example I was giving. So when you are actually using Internet as a vehicle or as a tool to connect people, you -- for meaningful access, I guess, what you really need to do is ensure that this, I guess, tool does support the method of communication people prefer. Is their own local languages and in their own local scripts. And not only that, I guess, even those who are even those who are speaking English, meaningful access goes -- I think one of the reasons or one of the ways the Internet expanded in 2012 the top level domains was that people wanted to use top

level domains to identify communities, for example. Or identify -- so we saw an example of .NYC, .London, also many communities DNTs there, also some professional so, you know, you -- space or I guess other spaces like .technology or .photography which defines people's interests and people want to associate with that. So top level domains provide people, you know, choice. They also provide people access broader in their own language and meaningful access means that people should have that ability to use those top level domains to associate with the right top level domain, I guess. And be able to navigate the Internet in the language they're comfortable in.

>> Yeah. I wanted to touch a little bit more on what you said about education and awareness. And I know that a lot of people who speak English as a first language and are doing a lot of innovation in the U.S. might not think of universal acceptance when they're thinking of a lot of these issues. So I want to ask about the role that ICANN plays in education and awareness around UA?

>> Sarmad: So basically there are -- I would say there are three levels of interaction or three layers which we would want to address. When we're talking about universal acceptance, the starting point is awareness. But I think that it doesn't end there. The next step is understanding the technical details on how this actually could be achieved. And then this last step in the process is actually not just understanding the technical details but actually adopting those technical details to ensure that universal acceptance is actually integrated into the systems. All the relevant systems around people. So when we're working at ICANN, we are trying to work at all these three layers.

There are places where we want to go and I'll give an example of recently we settle arbitrated universal acceptance day on 28 March where we actually tried to reach out to communities across the globe in this particular case we supported and collaborated with communities in more than 40 countries and held more than 50 events. And the aim was to raise awareness of universal acceptances. We're following up with many of our partners, collaborators, and taking it to the next level. So next level is to engage with them and start doing technical training. A great example of that is as part of coalition for digital Africa which ICANN is involved in. There is a project the association of African Universites where we are working with AAU to make sure that the systems Web sites, e-mail servers for services for these more than 400 partners, Universites of AAU across Africa are universal acceptance ready. So we're doing a series of trainings with them and then, you know, we -- eventually the idea is to take it to the last level where people are not only just aware and not just capable but are actually actively ensuring that the technology they're producing and using is UA ready so that the local communities can actually benefit from technology more than they can actually at this time.

>> Kathleen: Making sure those technologist are something that can actually be used.

I wanted to ask you, Susan, with the different constraints of the government, different structure, what is NTIA's role in promoting UA? How do you see that and how does it work together with other organizations to do so?

>> Susan: Sure. Well, I think NTIA, it would be fair to say that we promote universal acceptance because NTIA broadly support digital inclusion. There is incredible amount of work being done by NTIA, not in my office, but to promote connectivity through very, very impressive broadband connectivity programs. But I think it's that policy piece where we're supporting a multi lingual Internet, not only at home but I would say more broadly that we -- so we've worked in the past with ICANN. We've collaborated with other people, other organizations who are interested in universal acceptance. We've promoted this at the IGF through a number of different workshops.

The focus of which has really been to kind of crack the code and answer the question why isn't universal acceptance being taken up as a priority issue by governments around the world? What are the barriers that are standing in the way of that? And through all of the discussions that we've had over the years, something that we found is really just a lack of coordination. There is so many different players that could be involved in promoting universal acceptance but they're not really speaking to each other. So I think one of the key challenges for any person in the government who is focused on this policy is how do you raise what is assumed to be a purely technical issue? How do you translate that and elevate it into and communicate the importance of it to meaningful connectivity, to providing government services to your citizens in their native language. That is, I think, one of the key challenges. And just as an experiment, NTIA we have our own different list serves and was just trying to consider what would be the most effective and efficient means to bringing this to any CTO's attention and after some time we discovered that submitting a bug report, it would be the most direct way to get your colleagues to look into universal acceptance. Because it can be very hard to explain this to CTOs within government departments who don't necessarily have a lot of time. But I think it's really the coordination piece and I'd like to -- we can talk more about that piece, but I think at least now that because of the excellent work that ICANN and Sarmad have done, the universal acceptance steering group at ICANN and we've just heard about all of the activity that is going on with the coalition for digital Africa, I think, you know, the future is bright when it comes to this issue, we just have so much more unexplored ground to cover.

>> Kathleen: Yeah, I think that's a really important point as well that even if you have all of the parts ready to make something fall within UA protocols that each part is not always

communicating and so even that can be an additional barrier, an additional thing you have to overcome. So my next question is for both of U. how do you ensure that universal acceptance is implemented in a way that respects cultural and linguistic diversity and what role do local communities play in this process? I think that that's an important question in the theme of digital inclusion and accessibility at this conference.

>> Susan: Well, so I actually haven't been on the ground where UA has been rolled out and in a nonAscii language country. I can't think of a more elegant way to say that. But I would imagine that first and foremost you would be looking at the scripts themselves making sure that you understand how these scripts are used and being sensitive to that. I don't know if -- but to be honest, I don't know if cultural sensitivities -- I'm trying hard to find kind of an issue set there because I'm not familiar with one, but perhaps Sarmad and people who have experience on the ground can speak --

>> Kathleen: Pass it to you, Sarmad.

>> Sure. So I think just making things universally, you know, make universal acceptance already addresses, I guess, a cultural needs but I think going one step beyond is, you know, there may be some script-specific details which as Susan was also pointing out, which need to be sort of taken care of. And that's something which obviously ICANN has been very cognizant about. So one of the things which ICANN has done since 2012, this is, I guess, right after IDNA2008 came out. IDNA2008 by the way is the underlying protocol of standard. It stands for internationalized domain names and applications standards, which is based on a set of RFCs developed by Internet engineering task force. That lays the technical basis of how internationalized domain names are implemented.

What IDNA in 2008 does is it allege Mcly suggests some baseline mechanism where any particular script whichen coded in the Uni code standard can be used within the domain name system.

>> Kathleen: Will you just explain Uni code for people who don't know in this room.

>> Sarmad: Okay, so taking one step back. When we were talking earlier about these encoding schemes for computers, dm computers you can use numbers to represent certain letters much as we started out the first encoding scheme was -- Juan of the first ones was ASCII which mapped the 128 code point spaces on to letters, ABC and so on. We just talked about that but to encode all the different languages of the world you need much bigger space and and one of the things in early '90s, all the large technology companies like Microsoft and others did, they came together to form what is called unany code consortium. I guess Uni code consortium basically wanted to put -- make a very large code

page which had letters not only of English but all the languages of the world. So 128, limit of 128 characters Uni code has actually a limit of more than 1 million characters. Currently they're filled in about 150,000 so still plenty of space left. But those 150,000 characters currently support 168 scripts around the world, Latin being only one of the 161 and then there's Arabic and, you know -- I cannot possibly.

>> Kathleen: We could go on for the rest of the --

>> Sarmad: Yes, but there are 164 scripts including Egyptian higher row glisks which is now extinct but still used by researchers. So in any case, when internationalized domain names were being developed, they couldn't base that on to ASCII which is obviously limited. They had to base it on some level of code which could support all the languages and natural choice of course was unicode. So IDNA2008, the protocol actually is based on unicode and it sets a baseline. But, you know, ICANN -- and the standard itself says that it is a baseline and registries and those who were using this IDNA needed to do more to address user confusion. To address some of these things. Just to explain what could potentially cause user confusion, you know, there are letters, even in English which can sometimes be confusing. So, for example, sometimes capital I and L could be confusing or letter digit one. Similarly, when you extend those characters to 150,000 from about 128, the degree of confusion can increase potentially. ADNA2008 already puts in some levels of safeguard by not allowing everything, for example, not allowing punctuation marks and symbols in domain names but it stops there. So what ICANN realized was it's only communities which can actually determine what's the right way of using their script and domain names. We at ICANN or -- so what we did was we actually worked with communities. Over the last ten years or so, we've developed expert panels for all the different communities just to give you an example, the Arabic panel, Arabic script panel had 35 members from 22 different countries. And so on. So we actually developed supported panels where those script communities actually sat down, they included linguists, community members, DNS experts, and they actually devised the standard and mechanism to identify how their script should be used in the domain names. I think that's one way trying to identify the cultural sensitivity through IDNs making sure these are used safely from the perspective of the community which is actually using the script.

>> Amazing. I just wanted to touch on a couple more questions before we open it up to Q&A from the audience. So one of the things that's often said about UA is that you need to balance it with innovation. And new systems. So how do you balance a need for innovation and progress with the need to maintain compatibility with existing systems?

>> Sarmad: I'll go? (chuckles (.

So I think UA is trying to in some ways address something which is already innovative. Basically making Internet multi lingual is, it's a great innovation. It unfortunately doesn't work seamlessly because technology I guess needs to upgrade itself to become compatible with this new sort of requirements. But interestingly from an interoperability angle, there's always some of this innovation built into the internationalized domain name standard itself because, you know, going back as I was sharing that humans would like to see things in their native script and language which is unicode. Internet was built on an infrastructure which was relying on seven or eight bit encoding which is largely based on ASCII. Unicode normally is, I guess, so when we wanted to transition from like ASCII based Internet into multi lingual kind of Internet, there was obviously a choice that we just switch to unicode but that meant we had to undo all the infrastructure of Internet which was already there. And that obviously didn't -- wouldn't really fly because that would be just too difficult. There was just so much out there. So what -- the way people at Internet engineering task force innovated was they said okay what we'll do is keep the back end as ASCII and we'll take the front end applications or application layer which people are looking at, machines don't care whether something's in unicode or ASCII, right? They'll just process whatever data they get, but humans will need to see things in their own language. So what they said was that okay we develop a standard which has a face for humans where humans will see things in Arabic or Chinese or whatever script they want to see in: The complete interface will be in local languages. When they type something what the browser sends back doesn't need to be in that local language. It can actually convert that into what is called an ASCII compatible encoding. It sort of maps it into what is normally referred to as an A label. And that gets on the wire and get processed internalry. So very innovatevative that everybody seeing what they need to see but using the same back end infrastructure which then doesn't need to be upgraded anymore.

>> Kathleen: Yeah, I think making sure that people can type in their languages and end up in the same place and that you don't have, you know, conflicting two sites in two different languages that's in two different places is really interesting portion of this.

I wanted to ask you, Susan, in terms of government implementation, how do we ensure that UA is implemented in a way that's transparent and accountable and like what role does that play in achieving UA?

>> Susan: Well, first I'm not sure -- so I'm not sure if the immediate focus at least for NTIA has seen UA implemented in the States because we're not the primarily stakeholders here, right?

>> Kathleen: Sure.

>> Susan: But I think when it comes to the work that will be done by governments when they're implementing UA, they're already following a trend and standard that is just part of the multistakeholder development of policy which is that, I mean, if you go to the UASG Web site, everything is available, all the documentation is available. I don't see many challenges to transparency or accountability. Because I think that the approach that's already been taken that's just part of the process of standards and open standards development, I think that it is very important that -- it's an important thing to note that the development of standards that support universal acceptance it seems to me that work has already been done. It's been done at the IOTF, it's being looked at ICANN, all of the impressive panels. I had an idea about the panels Sarmad that you were speak being earlier such robust participation. I think as long as we follow those kind of principles in these venues, then that's the important thing, that's the best starting place.

>> Thank you for that. I wanted to ask one more question before we bring in the audience. So what do you both feel the future of universal acceptance to be? What are challenges, opportunities, and how can people in this room, otherwise get involved?

>> So actually if we look at the DNS itself, you know, I think that tells us some motivational universal acceptance. Because Internet started as a numbering system. Started with computers which had numbers. But early on people felt need that numbering system is not natural for us. So they added this naming layer on top of the numbering layer which then needs to get resolved. So even in English or when it started, people realized that we really need to have some fiewn nom nick system, not the numbering system which will make this work better. I guess universal acceptance is just taking it one step further. We are saying sure, the naming system is great but the naming system needs to go one step further and be in languages of people which are actually using the Internet. And now everybody's using the Internet and the naming system now needs to be in language of the people, right?

I think eventually it is -- sure, so we have many different stakeholders from UA adoption perspective. We work with universal acceptance steering group which is a community steering group, community driven steering group focusing on universal acceptance and they've identified government as a stakeholder to technology and tool developers as stakeholders, academia as stakeholders so they obviously identified multiple set of stakeholders and he with obviously are working with all the different stakeholders to address universal acceptance but I guess a message for us here is eventually it was done to us. You know, is the Web site I am making universal acceptance ready is the e-mail server or my e-mail server universal acceptance ready. If I can make my technology because that's under my control, it's not in anybody else's control. Earlier people used to say that I

can make my technology but I don't have the tools but now over time by USAG, you know, we have clear documentation that now you can actually develop technology, host e-mail servers which are UA ready. There's technology out there. We have documentation. So I think starting point would be we familiarize ourselves with what the requirements are and then talk to our tech teams and make sure our technology is UA ready. I think that would be a relevant is it aing point whereas of course USAG, ICANN, other organizations will continue to reach out to big tech organizations and other, I guess, stakeholders to raise that awareness but we should really start from ourselves.

>> So Susan: So I think the opportunities of the global Internet, that were truly multi lingual is we're bound only by the limits of our imagination and the -- so just to build upon what Sarmad was saying, I think at the institutional level there is an opportunity for some unprecedented coordination that can help between ICANN, the UASG, the ITU development sector and perhaps UNESCO. I mean, we're looking at -- we just entered the decade of indigenous languages at the UN, and in 2019 the United Nations general assembly adopted a resolution proclaiming the period of 2022, to 2032, the international decade of Indigenous languages, how can we build upon these types of initiatives and Foster collaboration and coordination across these institutions that are crucial to Internet governance and to promotion of multi lingual Internet and I think that's what we'll be focusing on.

>> Kathleen: Thank you so much for that. I want to open up to the you had a yoans both in person and online if anyone has questions.

We'll go over here first.

We can get you a mic too.

>> (Away from microphone).

How's that? That good?

All right. Thank you, panelists. This was very good. I have a question for both of you. A lot of the -- well, first, I'm kind of a techy myself. I have been doing technology for a long, long time.

How responsive have the major tech companies like Microsoft and red hat, IBM and Google search engine technology been to the requirement or the need to do this? And if they've not been as responsive as you would like or hope they would have been, what can be done? Is there any kind of cater and stick as I use the American idiom, is there any kind of thing we can do to say, hey Google, you know, you really need to get in here and if you do

so, it's going to be worth a lot of money to you. I know that most of -- in my experience it takes money to change things. Actually caused change how much money thinks they can make or is available to cause the change, where are we? Thank you.

>> Sarmad: Thank you for that question. Okay if I start.

So we've seen good progress both in the proprietary side of software technology and also on the open source side of technology, which, you know, we haven't reached where we can say, yes, we're ready or mostly UA ready. Just to give you a knew examples. Google's Gmail, for example, you can now send and receive e-mails in any script and language so they have been what we call level 1UA ready where they can send and receive e-mails but you cannot create an e-mail address for example in your local script. So you cannot create an e-mail address but if I send an e-mail to a Gmail address with using a Chinese e-mail address it will go and will be delivered and you can -- and you will be able to use in your Gmail address respond back to the Chinese e-mail address as well.

So they're level one ready. Not level two ready. Microsoft also recently -- so Gmail's been level one ready for many years now. And Microsoft is also -- their e-mail products supporting EI again at least level one. And then recently Apple actually announced that they are also supporting. So some of these large tech companies are already leading the way supporting UA partially at least as I said, not level two. Eventually I guess they'll come to level two as well. There's some obviously technical challenges going to level two because e-mail addresses are also used as fires, as user names which is used beyond e-mail and many other technologies. They actually have to be a bit careful about how they allow for, for example, Arabic or Chinese fires versus -- so those are things which obviously I'm sure they are working on.

So on the open source side, we see that more and more of e-mail tools, for example, are now supporting SMTPUFA which is a flag used for internationalized e-mail addresses. So there is good support which is coming in open source technology as well, career, post fix, some of those tools actually do support EI already. So we are increasingly seeing support. Eventually it comes down to business, right? If there is a user requirement, if your client or customers require a feature, they would prioritize that feature and support it. And I think that then boils down to all of us as well, once we start using our e-mail addresses, domain names and local languages, more and more and people see more and more traffic off these internationalized domain names or internationalized e-mail addresses, technology businesses will automatically, I guess, move forward and adopt these and provide support for these more and more for their own interest as well. So let me stop there. Yeah.

>> Susan: Very straight and short and sweet answer. Government procurement policies. And I think that is -- when it comes to these questions, when we're talking about standards, I think that applies not only to universal acceptance but to IPV6, DN sec government procurement policies I think should be the most effective pleons to at least generate promotion of these standards.

>> Kathleen: Awesome. Anyone else?

You have a question over here? Yeah.

>> (Away from microphone).

>> Hello. Yeah, I'm Subramanyan, ideas of universal acceptance that may require some more retention. One is for example IDNs are good for Egypt, for Egyptian users and it will bring more of Egyptian users to the Internet and those speakers would not speak and write English but at the same time an Egyptian IDN would also lead to an Egyptian Web of web space of users or who speak Egyptian language who are connected to one another and more connected but we are not connected to them because they are URL in Egyptian which we don't speak or write and the content is going to be in Egyptian. So one slight possibility is that universal acceptance and universal connectivity there is an element that could have a contra effect that of not actually connecting users to the Internet but detecting users to the Internet. Disconnecting one community from another. Is there enough being done to promote human level acceptance? A lot is being done for the technical acceptance of -- he technical universal acceptance but on the human layer is it not done to promote trust of one script within users of another script?

>> Sarmad: I'll try to answer that.

In a couple ways. First at a more higher level I think Internet or, you know, this online space is sort of a virtual world. It's sort of a reflection of our physical world in a I with a, right? We want to project -- so, you know, for example, this concept of Avatars, right? It's sort of a projection of us into a virtual space. So at the end of the day we want the virtual space to be as realistically close to our physical space. So when we talk about things on the ground, right, you will not expect people in Egypt, for example, to start speaking in English to each other, right. You would want them to continue to speak in Arabic. That's the reality of things. So the way we normally exist in the world, we are communities when we are talking within a community we communicate in a local language. When we are talking across communities like we are doing here, we speak in a language which is perhaps commonly understood. You can for example go to some place and English would not be the right language. You would probably want to speak in French. You go to Latin

America and you may want to speak in for example Spanish or some other languages. So there's no one universal language, right? Eventually you would want to -- depending on the community you are articulating with, you would need to represent or articulate in their local language. And I think that should really be left to the people to decide. It's not for us to regulate that what people should communicate in. So as technical folks, we need to make sure that we provide people opportunity to represent them in -- you know, themselves in any ways they would like. And let them choose what is the best for them rather than us trying to stimulate anything. I sort of go back to -- we got tons -- we have significant technology, you've got Google translate. You've got many other technologies which are allowing you to for example on the fly access content across barriers, you know, language barriers. So I think some of that is already getting addressed, but the idea would be to enable technology to make that seamless rather than to try to limit people. Thank you.

>> I think we'll take a couple more questions.

>> Go ahead. You're next.

>> Thank you. My name is Julianna. I'm a digital rights activist in Brazil and I would like to understand a bit more about the multi lingual strategy and what goal the, the main goal of it, challenges. And specifically in the case of Brazil, we have a huge indigenous community and I was in red scone last week when we were there discussing about accessibility and infrastructure. I mean, we need the education basis of some vulnerable communities to implement the real digital rights because, I mean, if I give my cell phone to some Indigenous people maybe they don't know how to use it. So I guess and I believe in the digital application and, of course, the infrastructure that they in the region for example in Brazil that I'm talking about but of course the language would be important to the -- to have the access, the real access because, I mean, I can speak now in English but of course I understand more in Portuguese or maybe in Spanish because it's near to my own language. So I'd like to understand better the strategy by itself. Thank you very much.

>> Susan: Well, I would invite you to look into what has been discussed at the Internet Governance Forum and we have -- NTIA has submitted a workshop proposal for this year's IGF in Kyoto in 2023, but I really think that the work there will give you kind of a bird's eye view of the folks who are involved in this promotion. There's no kind of centralized strategy, right? I think people -- and I think maybe part of that is the issue, that we need greater coordination at the institutional level around this. But yeah, I can -- and I can dig around for some links even to send them to you, but if you spend time with those workshops, it will give you kind of a better impression of what's going on. In 2021, we did

organize a high level workshop at the IGF and did invite Indigenous speaker from Brazil who presented her kind of her concerns about universal acceptance and language and preservation of her language too. So it would probably be very relevant for you.

>> Sarmad: Just to add one more resource to that list where you may also want to look at some of the organized schools done. There was this multi lingual in cyberspace they had some initial work which came out in early 2000s and they have done a lot of work since then as well. So that's another place you should actually go and take a look as well.

Thank you.

>> So we got one more question with the microphone there but then we'll -- we're going to take questions in the hall.

Okay, super. (Away from microphone).

Okay, go ahead.

>> My question is from the perspective of a small business owner and start-up founder. With these new domains that end in otherwise than like .org or .org. My company's name is technology computers so our Web site is WWW.technologist.computer. We've had a lot of issues with compatibility, you know, just trying to sign up for accounts with large companies, whether it's American Express or Chase bank or, you know, so I wanted to know like what guardrails and what resources are available to ensure compatibility of these newer domains that are coming on-board and what resources can organizations use to make sure that their systems are compatible, you know, with these newer domains.

>> Sarmad: Right. So I think this, again, leads to what we were discussing earlier that universal acceptance is not just a multi lingual issue. It is also an English issue so to speak, or ASCII issue, to be technically correct.   And, you know, it's not just about, you know, having these domain names in local languages but also these domain names like .photography or.technology which just don't work because there's just old technology which is currently being used, already used to develop websites. So, for example, if you go and sign on the example you were saying that you go to a Web site of a particular organization and sign on it, and they say that, you know, other enthough you have a valid e-mail address or domain name they say this doesn't look right. So that's exactly the universal acceptance problem which we are talking about. What could you do in that particular case? Of course, there are quite a lot of technical companies out there and we obviously need to get this message to eventually everyone. We are obviously working with the community to get to as many of them as possible but if you get stuck with any

particular one, first of all, you should do is make sure that you file a bug report with them or raise a complaint with them so that they know that this is a problem with their technology and they fix it. You could also reach out to us so, you know, e-mail us at basically, you know, info @ USC.tech or get in touch with us at UAprogram @ ICANN.org and we can also help try to reach out to those organizations but we I guess all need to keep at it because there are quite a few organizations out there. We're working with the community to raise awareness with as many as possible but of course we haven't reached out to everyone yet.

Thanks.

>> Kathleen: Well thank you to both of you. We appreciate your insights so much and thank you for being here and sharing with us.

[APPLAUSE]